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(Modified) For Fractures of the Inferior
Maxilla, and TAYLOR'S SPLINT
For Fractured Clavicle.

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(AT THE GASTRO DUODENAL JUNCTION.)

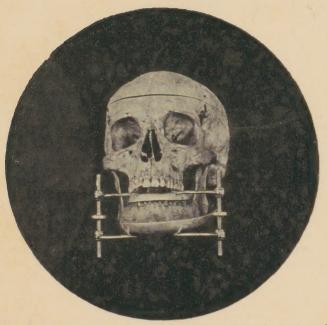
TAS, M. D. SURGEON-GENERAL'S P. FICE

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NEW ORLEANS, LA.

FROM
THE TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY.
1897.



Illustrations showing application of Ackland Splint for fracture of the lower jaw.



PRACTICAL DEMONSTRATION OF THE ACKLAND SPLINT (MODIFIED) FOR FRACTURES OF THE INFERIOR MAXILLA AND TAVLOR'S SPLINT FOR FRACTURED CLAVICLE.

BY RUDOLPH MATAS, M. D., NEW ORLEANS.
THE ACKLAND SPLINT.

The metalic split or apparatus for the treatment of simple and compound fracture of the lower jaw that I have the pleasure of presenting to the society to-night, is a slight modification of the appliance described Dr. Robert C. Ackland of London, in the

British Medical Journal of April 1, 1893*.

The model that I now show to the society was constructed under my direction by the McDermott Manufacturing Company of this city, and I believe is, in some particulars, an improvement on the original model. It is well known that the vast majority of fractures of the lower jaw (90 per cent.) occur in the body of the bone, especially in the neighborhood of the canine tooth and the mental foramen, this being the weakest part of the bone. It is for this peculiar class of fractures as well as for all those of the horizontal ramus that the Ackland splint is intended. Of course, for fractures of the angle, of the condyle, and of the coronoid process, any splint that would permit the normal movements of the lower jaw would be contra-indicated. The ideals aimed at in the treatment of fracture of the lower jaw are (1) to reduce the fracture accurately; (2) to maintain reduction and immobilization; (3) to accomplish the first two objects without interfering with the movements of the tempero-maxillary articulation, i. e., to permit the patient to open and shut his mouth at will, especially in feeding, without interfering with the treatment.

The ordinary treatment of these fractures is usually fairly satisfactory especially in the simple factures, but the immobilization of the jaws compelled by the usual four tailed bandage over a gutta percha or molded card board gutter, is a matter of no slight inconvenience especially when we consider that by this method the coaptation is not so accurate in the majority of cases that it will compensate for the prolonged confinement and interference with eating involved in the treatment. I believe, however, that in the majority of cases that come to us for treatment, especially among the poor, who supply the clinics of the hospitals, that sufficiently satisfactory results can be obtained by the plan that I have pursued for several years in dealing such cases. This method has been as follows: A piece of coarse, porous, but thick blanket,

^{*}It is a so referred to by myself in Sarjous' Annual for 1894, (See K., Vol. iii.)

or of heavy flannel, is cut in the manner described in all the texts for adapting gutta percha or card board to the lower jaw, i. e., in two tails held by a connecting uncut portion in the center. The pieces must be made long enough to extend from under the chin and the angle of the jaw up as high a the zygoma, and horizontally backward to overlap the angle. The material is then thoroughly soaked in hot water and after it has become saturated it is then soaked in thin cream of the best plaster of Paris. While it is still wet and soft it is carefully adjusted to the jaw after the fracture has been reduced, and while the fragments are held firmly in place. The skin should be well greased with vaselin, or if it is a compound fracture a careful antiseptic dressing should be adjusted leaving a space for a drainage tube or pack, if contamination through the mouth has occurred. Whilst the plaster splint is being carefully adjusted to the jaw by an assistant a porous gauze or crinolin bandage is now firmly applied over the head with the turns given to the ordinary Barton's bandage (or its modification by Wharton) which is touched over, in its facial portion, especially over and under the jaw, with a thick coat of liquid glass. This combination bandage answers the purpose admirably as an immobilizing apparatus, and, in simple fractures which there is little laceration of the gums or mucous membrane of the mouth which does not require frequent washing, will secure excellent results with comparatively little trouble or expense to either the patient or the surgeon, as the splint can be readily removed and reapplied every few days if it becomes soiled. I have utilized this dressing in many cases in my practice, and have found it to be far superior to the old card board or gutta percha splints.

In certain compound fractures of the jaws in which antiseptic irrigation of the mouth, at frequent intervals, is a great necessity, I believe that the Ackland splint will prove the superior device, especially if made light by using aluminum and by perforating it freely. I would recommend it for trial in these cases, though I have never had an opportunity to test it practically. It is for this class of cases, comminuted and compound, involving the body and ramus of the jaw, that the inter dental splints (Hammond's, Sauer's, Bishop's, Williams', Gunning's, etc., etc.) have been devised, but they do not appear to me as generally applicable as the Ackland splint which immobilizes the broken bone without interfering with its normal movements. Furthermore, to apply any one of these inter-dental or mixed intero-external splints, the services of a dentist are generally required, and thus, as claimed by Ackland, much and valuable time will be lost before the fracture can be properly set. In addition they favor the stagnation of saliva, which, laden with decomposing discharges and debris of food, etc., bathes the ends of the bone and the soft tissue surrounding them. This condition is made worse by the constant play of the ends due to the uncontrolled action of the powerful muscles of mastication, and by gravity. All these causes lead to the extremely foul condition which is the characteristic of these fractures and is the cause of the complications which so frequently attend them, viz.: Abscess, periostitis, necrosis, adentis, and sometimes far more serious septic complications, especially in the aged such as

septic ("shluck") pneumonia, etc.

The claims made for this splint are, (1) that its mode of application being apparent as well as simple it can be applied in a few minutes owing to its being universally adaptable (at least in adults); (2) it can be applied over and over again in different cases without alteration or renewal, as it is easily sterilized; (3) it can be applied without the supplementary use of a bandage; (4) it al lows a free irrigation of the mouth with detergents and antiseptic (hydrogen peroxide, formalin permanganate, iodoform, alcohol, etc.); (5) its application involves no other part but the lower jaw. It interferes but little with eating or drinking, speaking, or sleeping, because of the swivel action of its clamps.

The splint merely consists of a plated metal horse shoe shaped piece which rests upon the teeth and a similar one, which is applied below the chin. These are fastened together by two mov-

able clamps.

I have modified the original model, as described by Ackland, by increasing the length of the lower horse shoe cup so that it will support the jaw up to its angle, I have also made the lower plate more crescentic so as to intefere less with play of the hyoid and thyroid cartillages in stout necks.

In addition to using aluminum to make the splint lighter, it should be perforated, so as to still further diminish its weight.

"To apply the splint, the mouth plate or metal gutter which is to rest on the teeth or gums in edentulous jaws, is lined with ordinary splint gutta percha or dentist's wax. This is warmed and driven down on the teeth as far as the shallow plates allow. An untrained assistant can hold the fragment in position whilst this is being done or if necessary the surgeon himself can do this with his disengaged hand. The chin plate lined with two layers of wash leather or gauze is put into position and held there. The swivel clamps are then fitted on to both plates and by the thumb screws can be made to clamp the plates together until the requisite tension is obtained. Ackland states that he has had several opportunities for treating fractures of the lower jaw with his support at St. Bartholomew's hospital and finds the result eminently satisfactory excepting in cases in which severe inflammation interfere to a certain extent with the application of the chin piece.

For my part I believe that while this appliance is not applicable

to every form of fracture the lower jaw it is theoretically, at least, one of the most satisfactory that has been suggested for just such fractures as I have specified.

THE TAYLOR SPLINT.

I also have the pleasure of introducing to you a new apparatus for the treatment of fractured clavicle, which I believe has never been tried here. It is the Taylor splint and is due to the ingenuity of Dr. H. Ling Taylor of New York, to whose kindness I am also indebted for the present model. The splint was first formally introduced to the profession by Dr. Seneca D. Powell of New York, who showed the patient before the North-Western Medical and Surgical Society of New York, November 25, 1896,—[Medical News, February 20, 1897]—on whom the splint had been used with most satisfactory results.

Dr. Powell's case—a young man who had sustained a fracture of the outer third of the clavicle from a bicycle accident—had been in great pain and agony for several hours after the injury, due to over-riding of the fragments and spasm of the muscles. He experienced complete relief immediately after the application of the splint and within a few hours was able to go about the same as before the accident.

As said by Dr. Riddle Goffe, at this meeting, the prominent feature which recommends itself as superior in this splint, is that it allows the patient the free use of his arms. Furthermore, it is a very clean appliance and does not cause irritation of the skin from retention of sweat and other skin secretions, as is the case with the Sayre adhesive plaster bandage, the Dessault, or modifications of the Vespeau bandage, which are almost universally applied in our clinics. This feature is particularly objectionable in our climate, especially in Summer, where the excessive perspiration almost invariably causes a very annoying eczema or erythema which, in my experience, has proved sometimes as serious and often more disagreeable than the fracture itself. This clavicle splint, as stated by Dr. Taylor, was gradually evolved from the front piece of the improved apparatus for Pott's disease, which was added to the original Taylor brace by its inventor, Dr. C. Fayette Taylor, about the year 1876. Soon afterward the front piece, buckled to a pad in the back, was used by Dr. Taylor as a clavicle splint in several cases with good results; later it has been used by Dr. Henry L. Taylor and in a number of cases had worked admirably.

As previously stated, its features are its comfort, efficiency, and the freedom it permits the patient, who often can use the arm, though it is advisable to use a sling for the first few days. It is different in principle from any clavicle splint heretofore described and acts as and artificial shoulder girdle. As we all know, the essential indications that ought to be met in all cases of fractured clavicle, are (1) to reduce, and (2) to maintain reduction, by continuous extension outwards and backwards to overcome and correct the action of the pectorals, subclavious and latissimus; (3) to elevate the shoulder in order to counteract the upper traction of the sterno-mastoid which, in fractures of the middle third (or common variety), pulls the inner fragment upward: (4) to immobilize the fractured point completely and insure rest by relieving the outer end of the bone, of the continuous downward traction caused by the weight of the arm. All of these indications appear to be met by the Taylor splint which maintains a continuous outward extension and thus keeps the fragments in opposition. Thus far I have not had occasion to test this splint clinically as it has come to my notice very recently and for this reason is presented to-night hoping that some of the members present will either in hospital or private practice soon meet with an opportunity that will allow this splint to be put to a practical test. I can confirm what Dr. Taylor has already insisted upon, and that is, that the splint requires accurate adjustment to be efficient. I have had a model made which I am now trying on a little girl with stooped shoulders, the result of defective muscular development with excessive backward curvature.

In this case the splint acts as a brace and is simply accessory to the action of two elastic straps which are attached to the pad posteriorily and are made to pass under the thighs. By this means a constant extension of the spine is maintained which I believe will materially assist in correcting the stooping tendency. In applying this splint it will be proper, as an additional precaution with the view of securing immobility at the fractured point, to apply two strips of adhesive plaster over the fractured ends. These strips are applied vertically from the anterior edge of the trapezius to a point two or three inches below the clavicle; two cross pieces above and below the clavicle will also aid in diminishing upward and downward movement if applied in the manner

shown in the diagram.

It has been objected (by Phelps) that this splint is not applicable to fractures to the inner third of the clavicle, but I believe with Powell that this objection is overcome by the fact that this splint brings pressure to bear on the coracoid and anterior portion of the scapula and humerus directly over its muscular attachments. Of course, it is only by repeated clinical experience that we can determine the comparative value of this splint. It certainly has many salient features to recommend it and the only obligation that I can consider of weight at this moment against its general adoption, is the fact that it is not accessible to practitioners

in rural districts who are far away from the instrument dealer or manufacturer. The splint is not expensive; it can be had to order at a cost of \$2.50.

At the suggestion of Mr. McDermott I have substituted a sliding clamp and thumb screw to the plain screws of the original model, which adjust and hold together the movable bars in front. This little alteration greatly faciliates the accurate adjustment of the splint.

A FATAL CASE OF LATENT PERFORATING ULCER OF THE DUO-DENUM (AT THE GASTRO DUODENAL JUNCTION) CLINICAL REPORT, FROM BEDSIDE NOTES, WITH EXHIBITION OF SPECI-MEN, BY RUDOLPH MATAS, M. D.

On the night of December 29, 1896, I was summoned to the bedside of Capt. I. D., of the steamship "Catalina," plying between this port and Barcelona, Spain. I saw the patient at 10 p.m. I found the captain lying on his back in bed and unable to move. His haggard, anxious face and rapid thoracic breathing at once attracted my attention and confirmed his first statement to me to the effect that he had been seized that evening, very suddenly with an acute, fearful and indescribable pain under the right ribs and epigastrium, promptly followed by another, and very constant pain, in his right shoulder. Before proceeding with a direct physical examination I learned from him that he had hitherto enjoyed very fair health and had rarely been called upon to consult a physician during his life time. He told me that he was 45 years old, was married and had several healthy, living children and had always led a sober and quiet life. He did not indulge in stimulants and had escaped from the venereal diseases which. are common in seafaring men. His general physique which was remarkably good appeared to bear out these statements fully. I had known the patient personally two years and I had always been impressed with his vigorous, robust, tall and well proportioned figure (he was over six feet high.) He only remembered that he had suffered with an occasional obscure "annoyance" after his digestion which he attributed to dyspepsia and for which he frequently drank vichy and bi-carbonate of soda. Apart from this he never suffered enough to cause him to consult a physician. His present illness came on during the day a little before noon when he experienced several colicky pains about the region of the stomach. These pains made him hurry through his business on shore, though he felt no serious alarm on account of them. He ate a light dinner and did not feel the worse for it, for some time after. It was not until about 5 p. m., nearly three hours after

eating, that the pains attacked him with sudden and increasing violence and he was compelled to go to bed. The pain appeared to be most severe in the right hypochondrium from the start and then gradually extended over the epigastrium, part of the umbilical region and finally spread to the hypogastrium. He described his suffering as agonizing and believed that he had been "mortally stricken" and would never recover from this illness. When the pain first came on he vomited once or twice a green bilious fluid matter with gastric contents in which were noticed a few faint streaks of bloody mucus which were attributed to the violent efforts at vomiting.

When I saw him at 10 p. m., his pulse was fairly full and regular averaging 90 to 100 per minute. The temperature taken in the mouth was 98° F. This was so remarkable that the observation was carefully repeated and verified. The patient, as stated, could not turn or move without great increase in the pain which compelled him to remain fixed and immovable as he lay slightly

propped upon pillows.

Upon examinating the abdomen, the epigastrium and abdominal surface appeared to be *extremely retracted* and *sunken*, this being due to an extraordinary rigidity, and tetanic contraction of the abdominal muscles especially in the upper or epigastric belt. There was considerable tenderness on *firm* pressure over the entire abdomen, but deep palpation was impossible on account of the

almost woody hardness of the abdominal muscles.

The patient also persisted in calling attention to his right shoulder which, over the acromion process, was the constant seat of an aching pain. Vomiting had ceased completely when I saw the patient, and he could drink water and tea without pain or nausea. The skin over the extremities was cool and moist; the forehead bathed in perspiration, apparently from the great pain. The bowels had been moved with Condal water the previous day, but since the attack had come on, all efforts to move the bowels by repeated enema and had failed. The urine was moderate in quantity and dark from urates, and, as shown later, hyper-acid, high specific gravity, and free from albumen, sugar, bile or other abnormalities.

The heart was sound and there was no lesion in the lungs or pleura as far as a careful examination could discover. The rapid breathing, over 35 a minute and a shallow, appeared to be due simply to the interfered action of the diaphragm and contraction of the abdominal muscles. The assimilation and nutrition to this attack had evidently been good judging by his splendid and well proportioned physique.

In summing up the evidence I was impressed by the following

facts:

r. A sudden violent and penetrating pain which began distinctly in the right hypochondrium, then extended to the epigastrium gradually spreading to the whole abdomen, though less in the inferior or hypogastric ofiliac regions.

2. Tetanic, general rigidity of the abdominal muscles with

retraction.

3. Slight hypothermia (98° F.)

4. A fairly good, soft, non-inflammatory pulse, 90-100; not

thready, gaseous or filiform, but normal in quality.

5. No previous history to give a clue to present condition except some dull, ill-defined, vague, inconstant, epigastric pain, attributed to dyspepsia, which appeared, occasionally, *some hours* after the ingestion of food.

Now, what was it that ailed the man, was the question? How

to account for the intense evident suffering.

I could come to no satisfactory conclusions. The ship surgeon who had been in attendance all day and knew the captain well, could only confirm the patient's statements and simply suggested that the captain had exerted himself a great deal since his arrival in port and had exposed himself constantly to cold and rain. He (the doctor) had tried to relieve him by giving enemas with asafætida and antispasmodics, but had failed.

Gall stones were suspected, perhaps a calculus suddenly dislodged from the gall bladder and now impacted in the cystic or common duct. I could not tell whether there was jaundice, and decided to wait until next morning when an examination by daylight might show an icteroid tinge in the sclera or other sign that would help to clear the diagnosis. In the meantime hot turpentine stupes alternating with unctions of belladonna ointment were applied to the abdomen. Enemas of turpentine and asafætida were continued and 4 gr. pellets of morphia were ordered to be

given cautiously by mouth to diminish the pain.

Second Visit—Wednesday, December 30, 1896. Found the patient propped up in his bunk in the same attitude. The face is haggard; a distressed, anxious and haunted look; almost a hippocratic countenance. The patient had not slept all night. He said, "I am still suffering horribly with my belly, but much more with my right shoulder, which must be relieved or I will die. The respiration was then almost entirely thoracic and from 38 to 40 per minute. The face and extremities were cold, clammy and covered with sweat. There had been no vomiting whatever, notwithstanding the fact that the patient had taken 1 oz. of castor oil during the night with the hope of relieving the cramp in the belly. He had drank several cups of hot tea, milk and broth and all had been retained without nausea or additional pain. The tongue was moist in spite of the fact that two quarter grains of

morphia, in tablets, had been taken during the night. A scant action had followed the combined administration of the oil and the enemas though the latter were rejected almost immediately by the rectum. Rectal examination revealed no abnormality except that the rectum was quite empty. The urine still highly colored and scant, in all one pint during the night. Condition of the abdomen, rigid, hard; abdominal muscles evidently tetanically contracted. Marked retraction without tympanites, especially in epigastrium and umbilical regions; a little more fullness in the hypogastric region than last night. The most notable change has taken place in the pulse which is now small and beats at 120 per minute. Temperature in mouth 99°, in axilla 98½°. No abnormal sounds in chest and heart. Mind perfectly clear. No jaundice. The exact diagnosis at this second visit was still problematic. The change in the pulse indicated some serious occurrence and the thought of perforation of gall bladder or of

rupture of cystic duct from gall stone occurred to me.

The possibility of perforation of the stomach from latent ulcer did not escape me, but I could not reconcile this with the history of hypochendriac pain and pain in the right shoulder which directed my suspicion to the biliary apparatus. Then the previous history, the absence of all vomiting, or of hemorrhage by mouth was puzzling in any circumstances. I gave a hypodermic of morphia 1/2 gr. and proceeded to the ship agents to communicate to them my opinion of the gravity of the case and to urge the transportation of the captain to the Touro Infirmary, the nearest sanitarium, where I concluded to perform an exploratory laparotomy if no change for the better occurred in a few hours and where accurate observations could be kept. At 11 a. m. I was informed by telephone that since the hypodermic, the patient had experienced great relief and was more comfortable than at any time since illness, and that he, himself, preferred to wait a little longer before moving to the Touro Infirmary. While I was not in the least reassured by this statement as I knew full well how readily the symptoms of peritoneal infection are masked by morphia, I recommended that the ship surgeon should keep a vigilant eve an inform me of any further changes until I could again call to the patient's bedside? This was an unusually busy day with me and could not reach the ship again until 9 p. m., when I called for the third time since 10 p. m. of the previous night to see the patient.

Third Visit - The patient was lying on his back perspiring profusely all over. He appeared to be very comfortable and contented.

He thought he was much better. He had not suffered sufficently to care for more morphine since my visit in the morning. His animation and cheerfulness contrasted singularly and ominously with his previous despondency and distress. That the condition of improvement was entirely illusory and fictitious, I promptly realized when I felt the pulse which was now thready and beat at the rate of 150 per minute and touched his cold, clammy skin. The respirations were costal, about 40 per minute. The abdomen still exceedingly hard, but much less tender; tympanites distinctly marked in hypogastrium. The aching in the right shoulder less pronounced. I saw that there was but little hope, nevertheless I thought that there might still be a chance by exploratory laparotomy, if the patient could only be roused sufficiently by proper cardiac stimulants to stand the shock of the exploration and anæsthesia. My own conviction at this time, was that either the gall, bladder or cystic duct had been ruptured and that the patient was in collapse from perforated peritonitis. I telephoned then for the ambulance and Messrs. Richardson and King, who responded took the captain to the Touro Infirmary. The patient scarcely realized the need for transportation as he felt so much better. As the patient was not the least nauseated, I gave 20 minims of tr. digitalis by the mouth with a small cup of hot tea and a hypodermic of 1.20 gr. of strychnia. The patient was admitted to the Infirmary at about 10:30 p. m. where he was given another hypodermic of digitalin, 1-100 gr.; strychnia, gr. 1.30. Hot stupes were kept on the abdomen and champagne was sipped at frequent intervals. Upon arrival, the pulse was 150-160. It appeared to improve a little after the strychnia and digitalis hypodermics, but not sufficiently to encourage the possibility of laparotomy. I left the patient with instructions that I should be called for during the night if the pulse improved sufficiently to warrant an exploration, but the patient continued to grow worse rapidly. The pulse became more shallow and weak and crept up to 160 170 and soon became imperceptible. The patient was conscious until 10 minutes before death, which took place at 4:50 a. m. or 40 hours after the inception of the first symptoms. Just before expiring he became slightly delirious and sank dead. He never vomited at the infirmary, nor at any time during his whole illness, except at its very incipiency. Temperature became markedly subnormal while at infirmary.

AUTOPSY at 6:30 a. m. Thursday, December 31, 1896.

Dr. Kohlman, Mr. Moss and myself, present. No jaundice. Abdomen rigid as wood; moderate tympanites. Median section begun a little below navel. The instant the peritoneum was opened a great gush of fluid consisting of sour, gastric contents escaped. The small intestine came to the surface covered with the flakes of fibrin and bathed in milky chyme. The jejunum was dilated, intensely injected. The incision was then prolonged to the

epigastrium. The transverse colon was then separated from stomach and was found covered with particles of food and other gastric contents. The stomach containing over a quart of fluid then came to view and presented nothing abnormal. After carefully examining the anterior surface of the duodenum and pyloric extremity the whole source of the disaster was easily discovered in the perforation which I will now show you. This perforation was due to an ulcer situated partly in the duodenum and partly in the pylorus in the antero-superior surface of the pylorus. The long axis of the ulcer is parallel with the long axis of the duodenum; it measures about I inch in its longest diameter and is oval in shape. The most interesting feature of the ulcer is its topography which easily explains the peculiarities of the case and the fact the stomach was capable of fully retaining its contents. The ulcer which I should state was clean cut, punched out and hard on the edges occupied the junction of the pylorus and duodenum. Only a small part of the oval was situated on the edge of the pylorus, the greater portion of it occupied the duodenum. In consequence of this situation, the ulcer was more strictly speaking duodenal than pyloric or gastra. Thus it was that all fluids or foods taken into the stomach were retained without distress until they were poured into the duodenum whence they were forcibly ejected into the peritoneum through the duodenal fistula. Little of the food or liquids ingested ever passed into the intestinal tract—almost all of the gastric contents were extravasated into the peritoneal cavity.

The fact that the ulcer was more duodenal than gastric explains in all probability the pain in the right hypochondrium and also accounts for the pain in the right shoulder which is not an uncommon accompaniment of gastric ulcers. The lack of gastric symptoms, of vomiting and hematemæsis, and the latent or symptomless presence of the disease, until the perforation took place, is also accounted for by the duodenal position of the ulcer. It is this duodenal localization that completely masked the diagnosis of the case. In fact it appears to me that the exact or positive diagnosis of perforating ulcer, of the duodenum was impossible; the belief or suspicion that some perforation had taken place in the region of the right hypochondrium was the only possible diagnosis.

and this only at the time of the second visit.

The lesson to be learned from the study of this case is that an early diagnosis not so much of the true nature of the disease, but of the mere fact of an existing perforation, might have saved life, or would have permitted the performance of a laparotomy with resection of the ulcer and suture, at a time when the patient's condition would have been able to bear the shock of the traumatism.

But the trouble in this case, as in most others of the same nature, was that the diagnosis of duodenal ulcers was not suggested by the history or the symptoms and that the existence of perforation was not made clear until my second visit when the patient's strength was ebbing fast. Even then it is possible that a successful operation could have been perfermed but a temporary lull in the symptoms which deceived the attendants, into the belief that improvement existed, caused an altogether fatal delay until night, when I saw the patient for the third time in 24 hours, and then realized that the opportunity for successful operation had been lost.